



Specifications

Doc. No1.

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Customer Approved

CHI LIN TECHNOLOGY				
QRA	Manufacture	Approved	Checked	Design

Revision History

Version	Date	Page	Section	Description
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Specifications

Doc. No3.

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1.0 GENERAL SPECIFICATIONS

1.1 OVERVIEW

The TBW021 module is a 31.5" wide TFT-LCD module. The module uses 4 U type-CCFL Backlight Unit and a 30-pin 1ch-LVDS. The module supports 1366*768 mode and 16.7 millions color.

1.2 GENERAL SPECIFICATIONS

Item	Specification	Unit	Note
Active Area	497.69(H) x 392.26 (V) (31.5" diagonal)	mm	
Bezel Opening Area	703.6 (H) x 398.4 (V)	mm	
Driver Element	a-si TFT active matrix	-	
Pixel Number	1366 x R.G.B. x 768	pixel	
Pixel Pitch (Sub Pixel)	0.51075(H) x 0.51075(V)	mm	
Pixel Arrangement	RGB vertical stripe	-	
Display Colors	16.7M	color	
Display Operation Mode	Normally Black	-	
Surface Treatment	Anti-Glare coating (Haze 20%), Hard coating (2H)	-	

1.3 MECHANICAL SPECIFICATIONS

Item		Typ.	Unit	Note
Module Size	Horizontal(H)	760	mm	
	Vertical(V)	450	mm	
	Depth(D)	44	mm	
Weight		5.2	Kg	

1.4 OPTICAL PARTS

Item	Part	Model	Vender
1	CCFL	U shape	GIO
2	Diffuser sheet	PTR773-T75*3	Shinwha
3	Diffuser plate	A53201	Entire
4	Reflector sheet	RE-200T	Eternal



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2.0 ABSOLUTE MAXIMUM RATING

2.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T _{ST}	-20	+60	°C	(1),(3)
Operating Ambient Temperature	T _{OP}	0	+50	°C	(1),(2),(3)
Shock (Non-Operating)	S _{NOP}	-	50	G	(3),(5)
Vibration (Non-Operating)	V _{NOP}	-	1.0	G	(4),(5)

Note (1) Temperature and relative humidity range is shown in the figure below.

(a) 90 %RH Max. ($T_a \leq 40\text{ }^{\circ}\text{C}$).

(b) Wet-bulb temperature should be 39 °C Max. ($T_a > 40\text{ }^{\circ}\text{C}$).

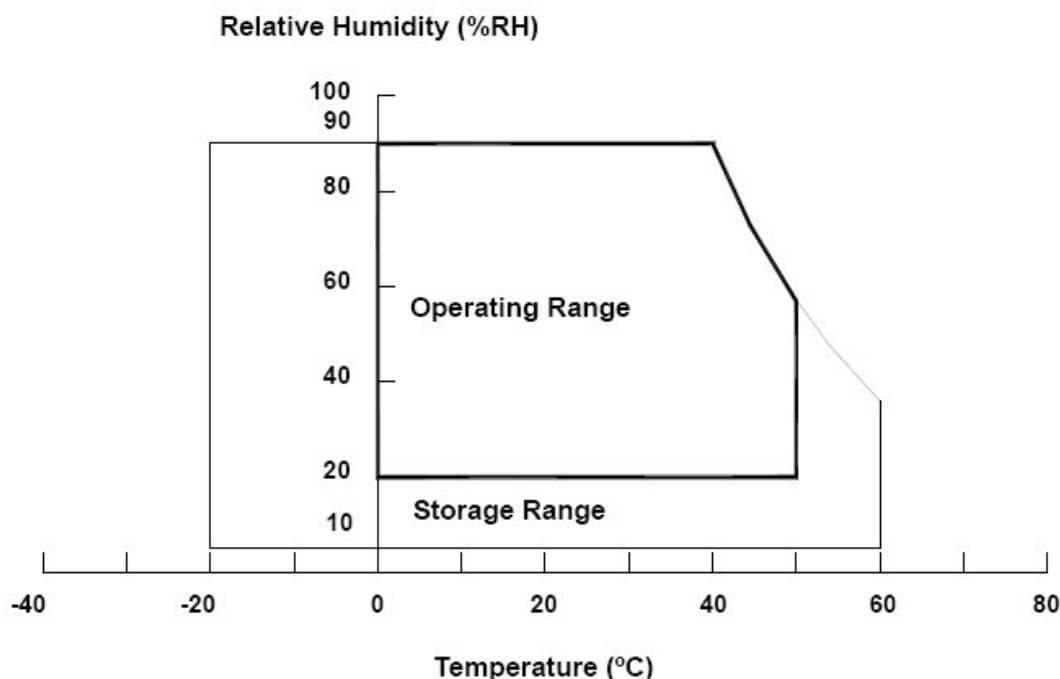
(c) No condensation.

Note (2) The maximum operating temperature is based on the test condition that the surface temperature of display area is less than or equal to 65 °C with LCD module alone in a temperature controlled chamber. Thermal management should be considered in final product design to prevent the surface temperature of display area from being over 65 °C. The range of operating temperature may degrade in case of improper thermal management in final product design.

Note (3) 11 ms, half sine wave, 1 time for $\pm X$, $\pm Y$, $\pm Z$.

Note (4) 10 ~ 200 Hz, 10 min, 1 time each X, Y, Z.

Note (5) At testing Vibration and Shock, the fixture in holding the module has to be hard and rigid enough so that the module would not be twisted or bent by the fixture.



3.0 ELECTRICAL CHARACTERISTICS

3.1 TFT-LCD MODULE

Parameter		Symbol	Min.	Typ.	Max.	Unit	Remark
+12V supply voltage	Supply voltage	V _{CC}	+11.4	+12.0	+12.6	V	[Note 1]
	Current dissipation	I _{CC}	-	300	600	mA	[Note 2]
		I _{RUSH}	-	1500	-	mA	[Note 5]
		T _{RUSH}	-	0.5	-	ms	[Note 5]
Permissible input ripple voltage		V _{RP}	-	-	100	mV _{P-P}	V _{CC} = +12.0V
Differential input threshold voltage	High	V _{TH}	-	-	100	mV	V _{CM} = +1.2V [Note 4]
	Low	V _{TL}	-100	-	-	mV	
Input Low voltage		V _{IL}	-	-	0.7	V	[Note 3]
Input High voltage		V _{IH}	2.6	3.3	3.6	V	
Input leak current (Low)		I _{IL}	-	-	400	μA	V _I = 0V [Note 3]
Input leak current (High)		I _{IH}	-	-	100	μA	V _I = 3.3V [Note 3]
Terminal resistor		R _T	-	100	-	Ω	Differential input

[Note] V_{CM}: Common mode voltage of LVDS driver.

[Note 1]

Input voltage sequences

$$0 < t_1 \leq 10\text{ms}$$

$$0 < t_{2-1} \leq 20\text{ms}$$

$$t_{2-2} \geq 10\text{ms}$$

$$0 < t_3 \leq 1\text{s}$$

$$t_4 \geq 1\text{s}$$

$$t_5 \geq 200\text{ms}$$

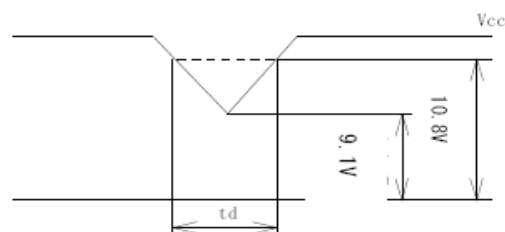
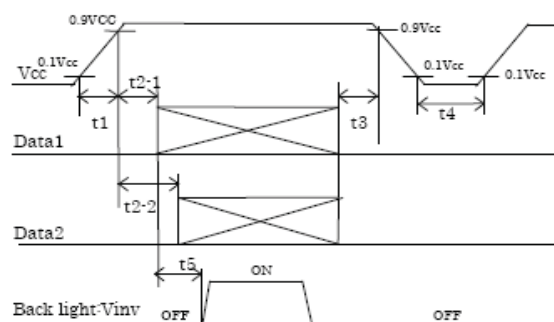
Dip conditions for supply voltage

$$\text{a) } 9.1\text{V} \leq V_{CC} < 10.8\text{V}$$

$$t_d \leq 10\text{ms}$$

$$\text{b) } V_{CC} < 9.1\text{V}$$

Dip conditions for supply voltage is based on input voltage sequence.



※ Data1: CLKIN±, RIN0±, RIN1±, RIN2±, RIN3±

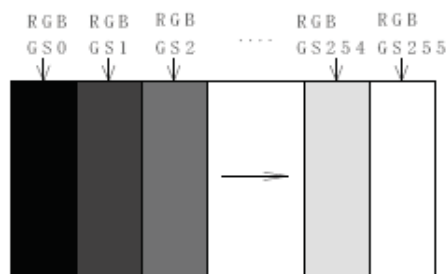
※ Data2: SELLVDS

※ About the relation between data input and back light lighting, please base on the above-mentioned input sequence.

When back light is switched on before panel operation or after a panel operation stop, it may not display normally. But this phenomenon is not based on change of an incoming signal, and does not give damage to a liquid crystal display.

[Note 2] Typical current situation: 256 gray-bar pattern ($V_{CC} = +12.0V$)

The explanation of RGB gray scale is seen in section 8.

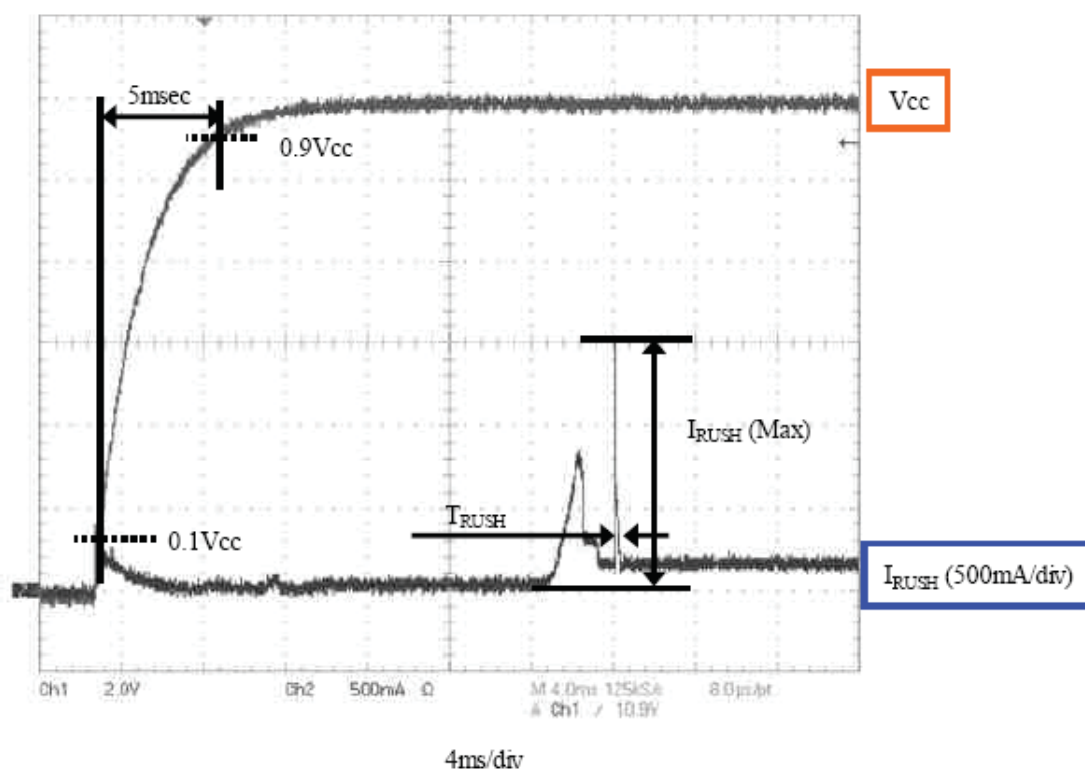


$V_{CC} = +12.0V$
 $CK = 82.0MHz$
 $Th = 20.68\mu s$

[Note 3] SELVDS

[Note 4] CLKIN+/CLKIN-, RIN0+/RIN0-, RIN1+/RIN1-, RIN2+/RIN2-, RIN3+/RIN3-,

[Note 5] The Rush current corrugation at the time of power on





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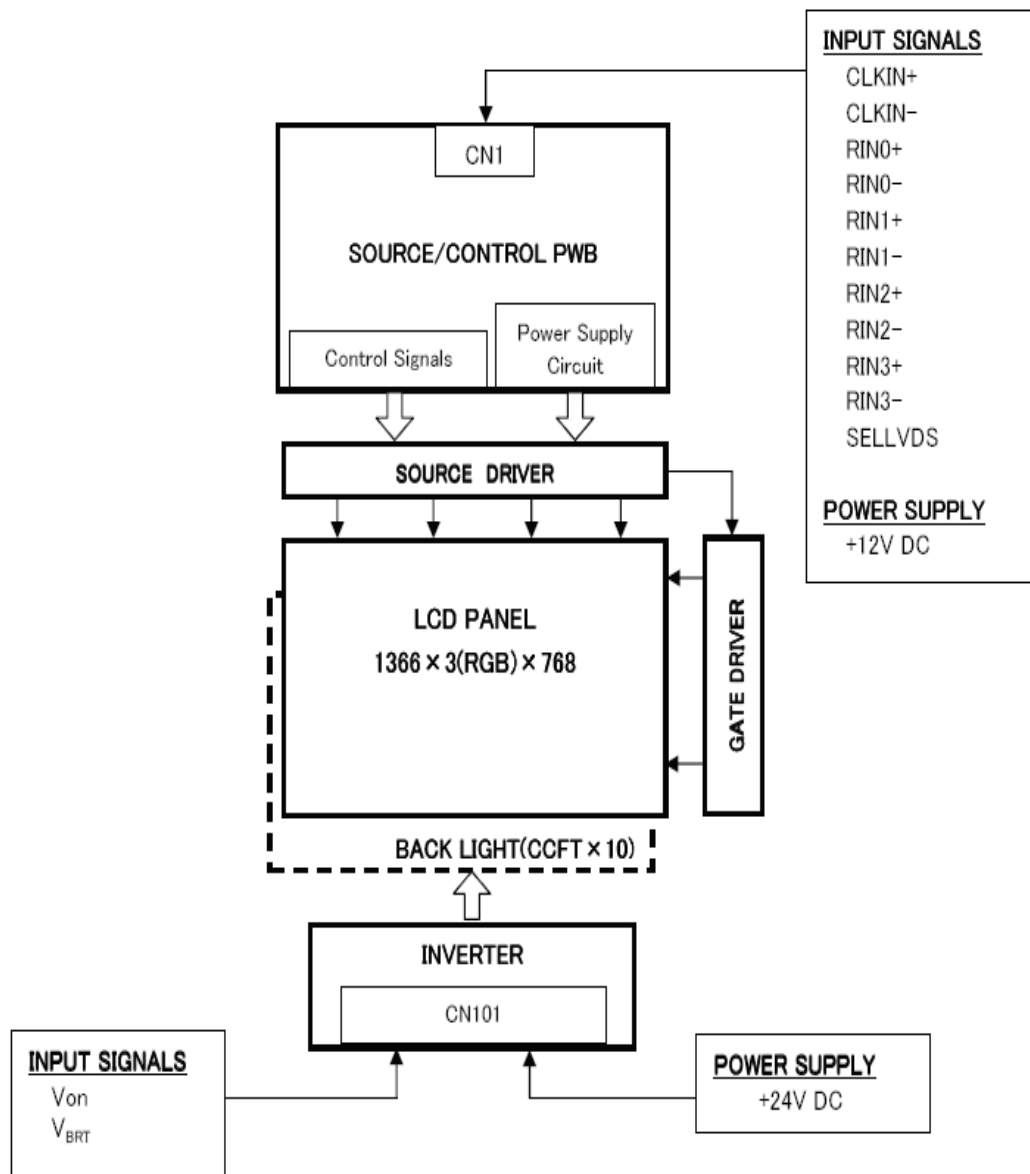
3.2 CCFL (Cold Cathode Fluorescent Lamp) Characteristics (Ta=25°C)

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max		
Lamp Voltage	V _W		1530		V _{RMS}	I _L =11.0mA
Lamp Current	I _L	8.5	11.0	11.5	mA _{RMS}	
Lamp Turn on Voltage	V _s			2190	V _{RMS}	Ta=25°C
				2540	V _{RMS}	Ta=0°C
Operating Frequency	F _L	30		60	KHz	
Lamp Life time	L _{BL}		50000		Hrs	

4.0 BLOCK DIAGRAM

4.1 TFT-LCD MODULE

· Block Diagram (LCD Module)





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5.0 INPUT TERMINAL PIN ASSIGNMENT

5.1 TFT-LCD MODULE

CN1 (Interface signals and +12V DC power supply) (Shown in Fig.1)

Using connector : FI-X30SSL-HF (Japan Aviation Electronics Ind. , Ltd.) or equivalent

Matching connector : FI-X30H/FI-X30HL, FI-X30C/FI-X30C2L
or FI-X30M (Japan Aviation Electronics Ind. , Ltd.)

Matching LVDS transmitter : THC63LVDM83R (THine) or equivalent device

Pin No.	Symbol	Function	Remark
1	VCC	+12V Power Supply	
2	VCC	+12V Power Supply	
3	VCC	+12V Power Supply	
4	VCC	+12V Power Supply	
5	GND	Ground	
6	GND	Ground	
7	GND	Ground	
8	GND	Ground	
9	SELLVDS	Select LVDS data order [Note 1]	Default: Pull up (H:3.3V) [Note 2]
10	Reserved	Not Available	
11	GND	Ground	
12	RIN0-	Negative (-) LVDS differential data input	LVDS
13	RIN0+	Positive (+) LVDS differential data input	LVDS
14	GND	Ground	
15	RIN1-	Negative (-) LVDS differential data input	LVDS
16	RIN1+	Positive (+) LVDS differential data input	LVDS
17	GND	Ground	
18	RIN2-	Negative (-) LVDS differential data input	LVDS
19	RIN2+	Positive (+) LVDS differential data input	LVDS
20	GND	Ground	
21	CLKIN-	Clock Signal(-)	LVDS
22	CLKIN+	Clock Signal(+)	LVDS
23	GND	Ground	
24	RIN3-	Negative (-) LVDS differential data input	LVDS
25	RIN3+	Positive (+) LVDS differential data input	LVDS
26	GND	Ground	
27	Reserved	Not Available	
28	Reserved	Not Available	
29	GND	Ground	
30	GND	Ground	

[Note] GND of a liquid crystal panel drive part has connected with a module chassis.

5.2 LVDS DATA MAPPING TABLE

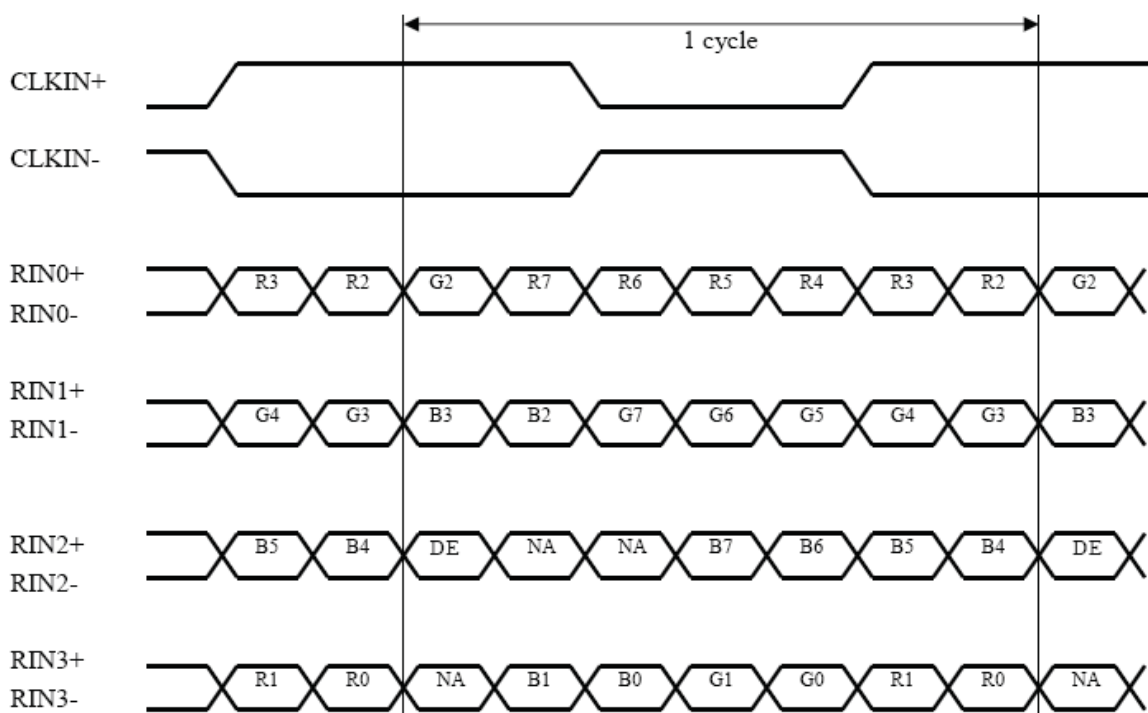
[Note1] SELLVDS

Transmitter		SELLVDS	
Pin No	Data	= L(GND)	= H(3.3V) or Open
51	TA0	R0(LSB)	R2
52	TA1	R1	R3
54	TA2	R2	R4
55	TA3	R3	R5
56	TA4	R4	R6
3	TA5	R5	R7(MSB)
4	TA6	G0(LSB)	G2
6	TB0	G1	G3
7	TB1	G2	G4
11	TB2	G3	G5
12	TB3	G4	G6
14	TB4	G5	G7(MSB)
15	TB5	B0(LSB)	B2
19	TB6	B1	B3
20	TC0	B2	B4
22	TC1	B3	B5
23	TC2	B4	B6
24	TC3	B5	B7(MSB)
27	TC4	NA	NA
28	TC5	NA	NA
30	TC6	DE(*)	DE(*)
50	TD0	R6	R0(LSB)
2	TD1	R7(MSB)	R1
8	TD2	G6	G0(LSB)
10	TD3	G7(MSB)	G1
16	TD4	B6	B0(LSB)
18	TD5	B7(MSB)	B1
25	TD6	NA	NA

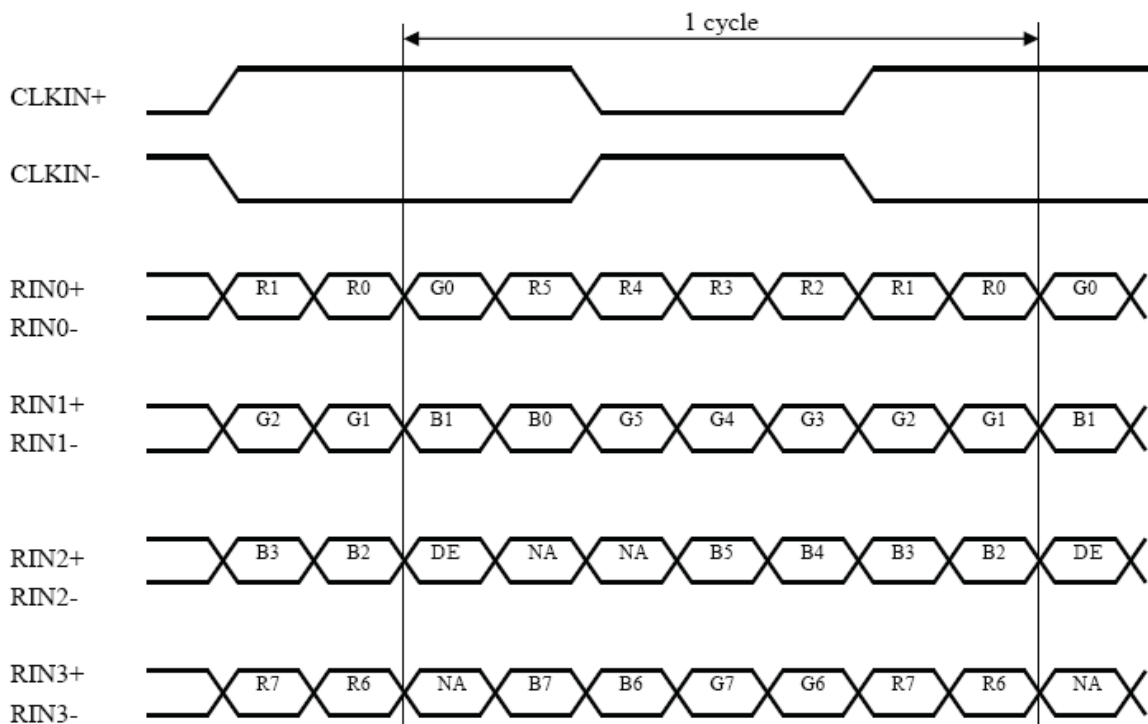
NA: Not Available

(*) Since the display position is prescribed by the rise of DE (Display Enable) signal, please do not fix DE signal during operation at "High."

SELLVDS= High (3.3V) or Open



SELLVDS= Low(GND)

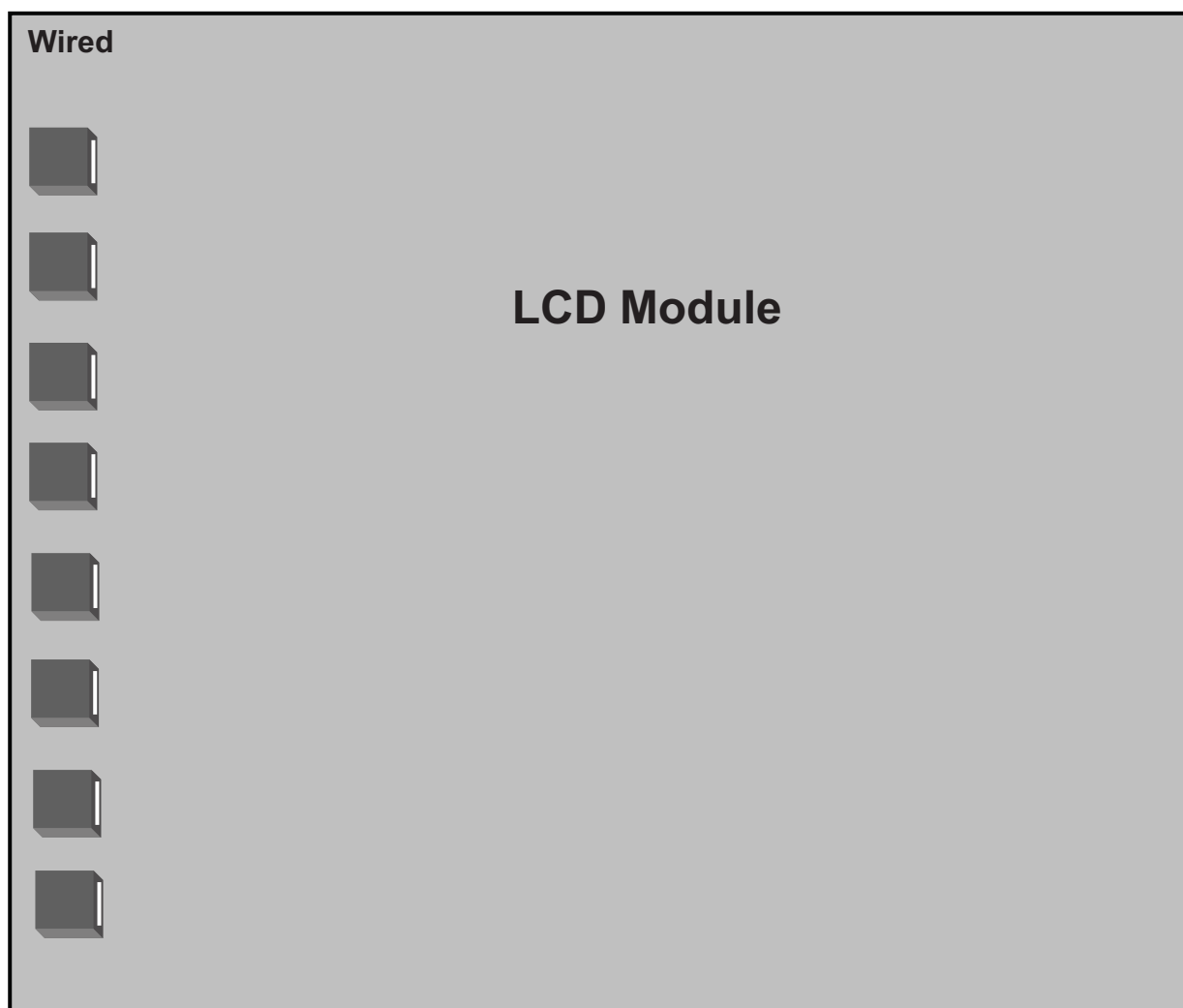


DE: Display Enable

NA: Not Available (Fixed Low)

5.3 BACKLIGHT UNIT

The back light unit consists of 4 U-lighting type CCFLs
(Cold Cathode Fluorescent Lamp).





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5.4 COLOR DATA INPUT ASSIGNMENT

THE brightness of each primary color (red 、green and blue) is based on the 8-bit gray scale data input for the color.The higher the binary input,the brighter the color.The table below provides the assignment of color versus data input.

Colors & Gray scale	Gray Scale	Data signal																							
		R0	R1	R2	R3	R4	R5	R6	R7	G0	G1	G2	G3	G4	G5	G6	G7	B0	B1	B2	B3	B4	B5	B6	B7
Basic Color	Black	—	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue	—	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Green	—	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Cyan	—	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Red	—	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Magenta	—	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	—	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	—	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale of Red	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	↑	GS1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	GS2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	↑	↓	↓							↓							↓								
	↓	↓	↓							↓							↓								
	Brighter	GS253	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	↓	GS254	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	GS255	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale of Green	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	↑	GS1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	GS2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	↑	↓	↓							↓							↓								
	↓	↓	↓							↓							↓								
	Brighter	GS253	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	↓	GS254	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Green	GS255	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Gray Scale of Blue	Black	GS0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	↑	GS1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Darker	GS2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	↑	↓	↓							↓							↓								
	↓	↓	↓							↓							↓								
	Brighter	GS253	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1
	↓	GS254	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
	Blue	GS255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

0 : Low level voltage, 1 : High level voltage.

Each basic color can be displayed in 256 gray scales from 8 bit data signals. According to the combination of total 24 bit data signals, the 16,777,216 colors display can be achieved on the screen.

6.0 INTERFACE TIMING

6.1 INPUT SIGNAL TIMING SPECIFICATIONS

The input signal timing specifications are shown as the following table and timing diagram.

Timing diagrams of input signal are shown in Fig.2

Parameter		Symbol	Min.	Typ.	Max.	Unit
Clock	Frequency	1/Tc	80	82	85	MHz
Data enable signal	Horizontal period	TH	1686	1696	1940	clock
			19.84	20.68	-	μs
	Horizontal period (High)	THd	1366	1366	1366	clock
	Vertical period	TV	778	806	972	line
	Vertical period (High)	TVd	768	768	768	line

[Note] When vertical period is very long, flicker may occur.

Please turn off the module after it shows the black screen.

Please make sure that length of vertical period should become of an integral multiple of horizontal length of period. Otherwise, the screen may not display properly.

As for your final setting of driving timing, we will conduct operation check test at our side, please inform your final setting.

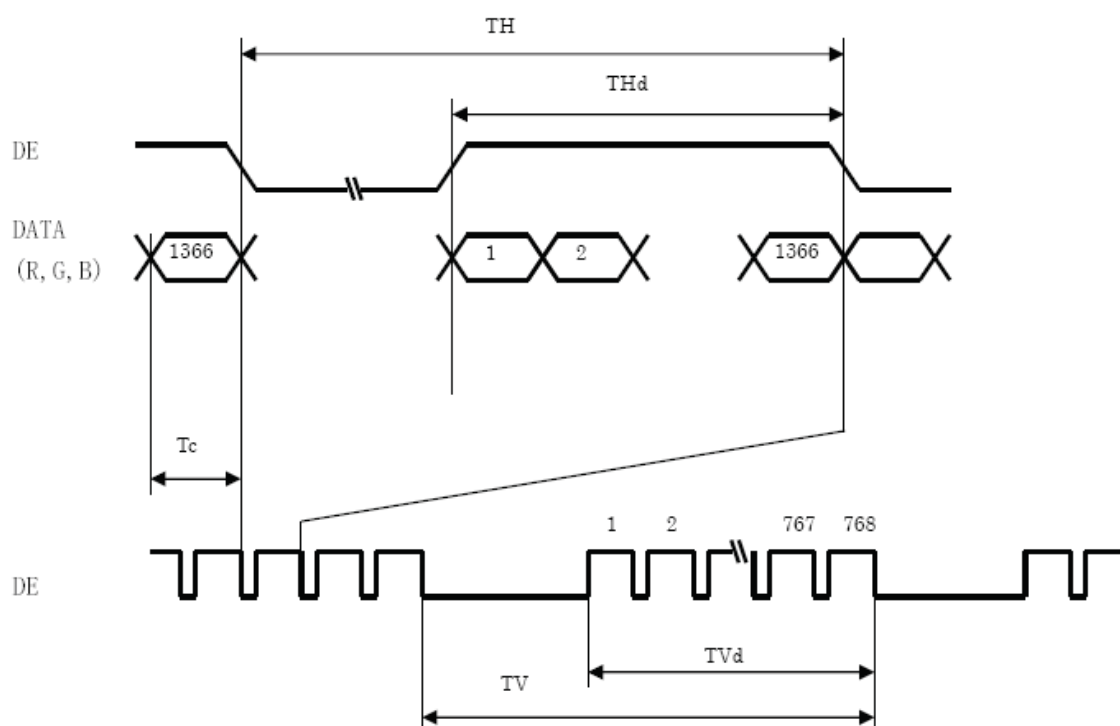
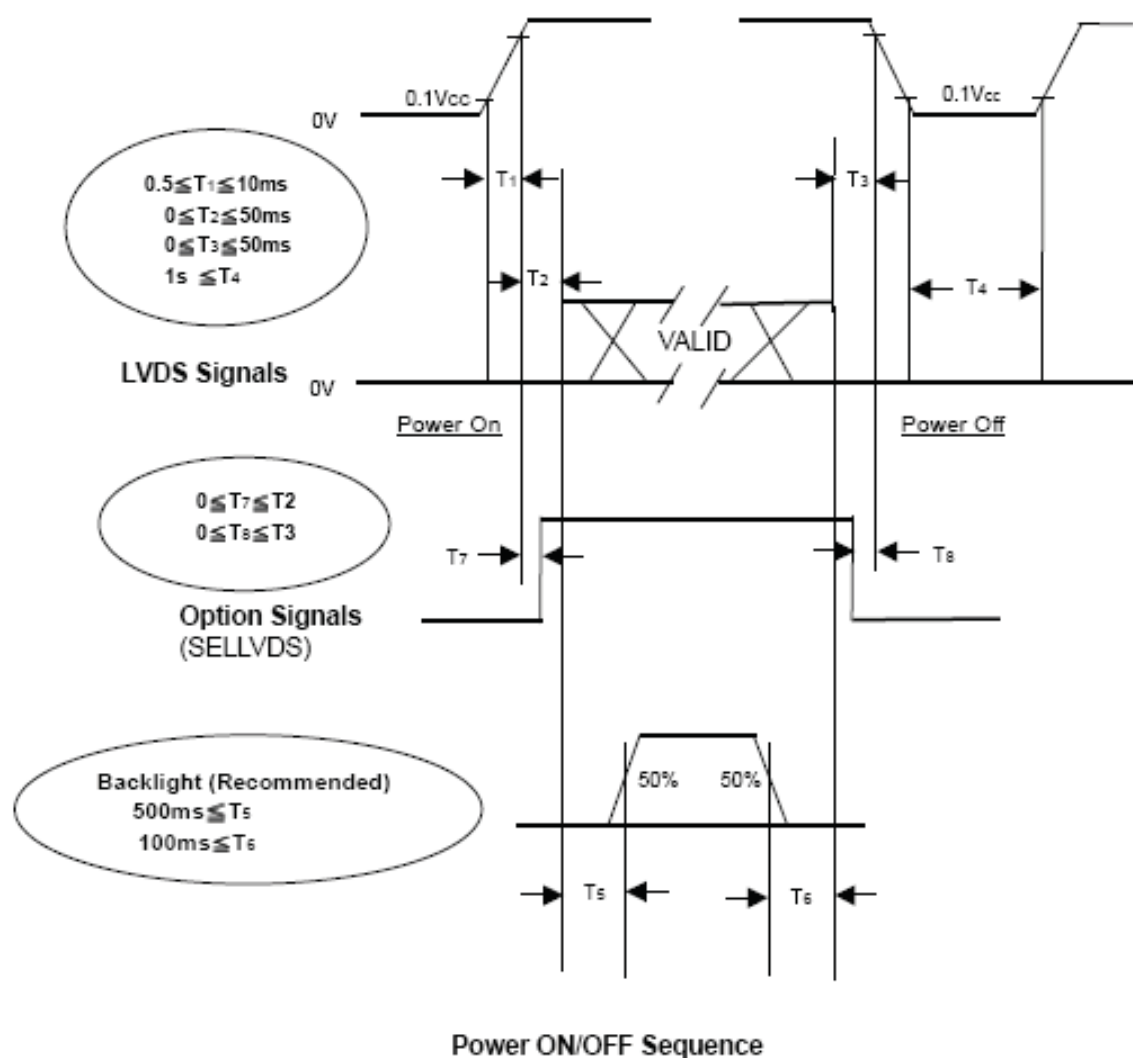


Fig.2 Timing characteristics of input signals

6.2 POWER ON/OFF SEQUENCE

The prevent a latch or DC operation of LCD module, the power on/off sequence should be as the diagram below.



Note (1) The supply voltage of the external system for the module input should follow the definition of Vcc.

Note (2) Apply the lamp voltage within the LCD operation range. When the backlight turns on before the LCD operation or the LCD turns off before the backlight turns off, the display may momentarily become abnormal screen.

Note (3) In case of Vcc is in off level, please keep the level of input signals on the low or high impedance. If $T_2 < 0$, that maybe cause electrical overstress failure.

Note (4) T4 should be measured after the module has been fully discharged between power off and on period.

Note (5) Interface signal shall not be kept at high impedance when the power is on.

7.0 OPTICAL CHARACTERISTICS

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	$\theta x=0^\circ, \theta Y=0^\circ$ Viewing Normal Angle	2300	2500	—	—	(1), (2)
Response Time		Tr		—	1.3		ms	(6)
Center Luminance of White		L _C			450	—	cd/m ²	(1),(3)
White Variation		δW		—	—		—	(1),(4)
Color Chromaticity	Red	Rx		Typ -0.03	0.630	Typ + 0.03	—	(1),(3)
		Ry			0.340			
	Green	Gx			0.288			
		Gy			0.590			
	Blue	Bx			0.144			
		By			0.072			
	White	Wx			0.280			
		Wy			0.290			
Viewing Angle	Horizontal	θx+	CR≥10	75	85	—	Deg.	(1),(5)
		θx-		75	85	—		
	Vertical	θY+		70	80	—		
		θY-		70	80	—		

Note (1) Measurement Setup: The LCD module should be stabilized at given temperature for 1 hour to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 1 hour in a windless room.

Note (2) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

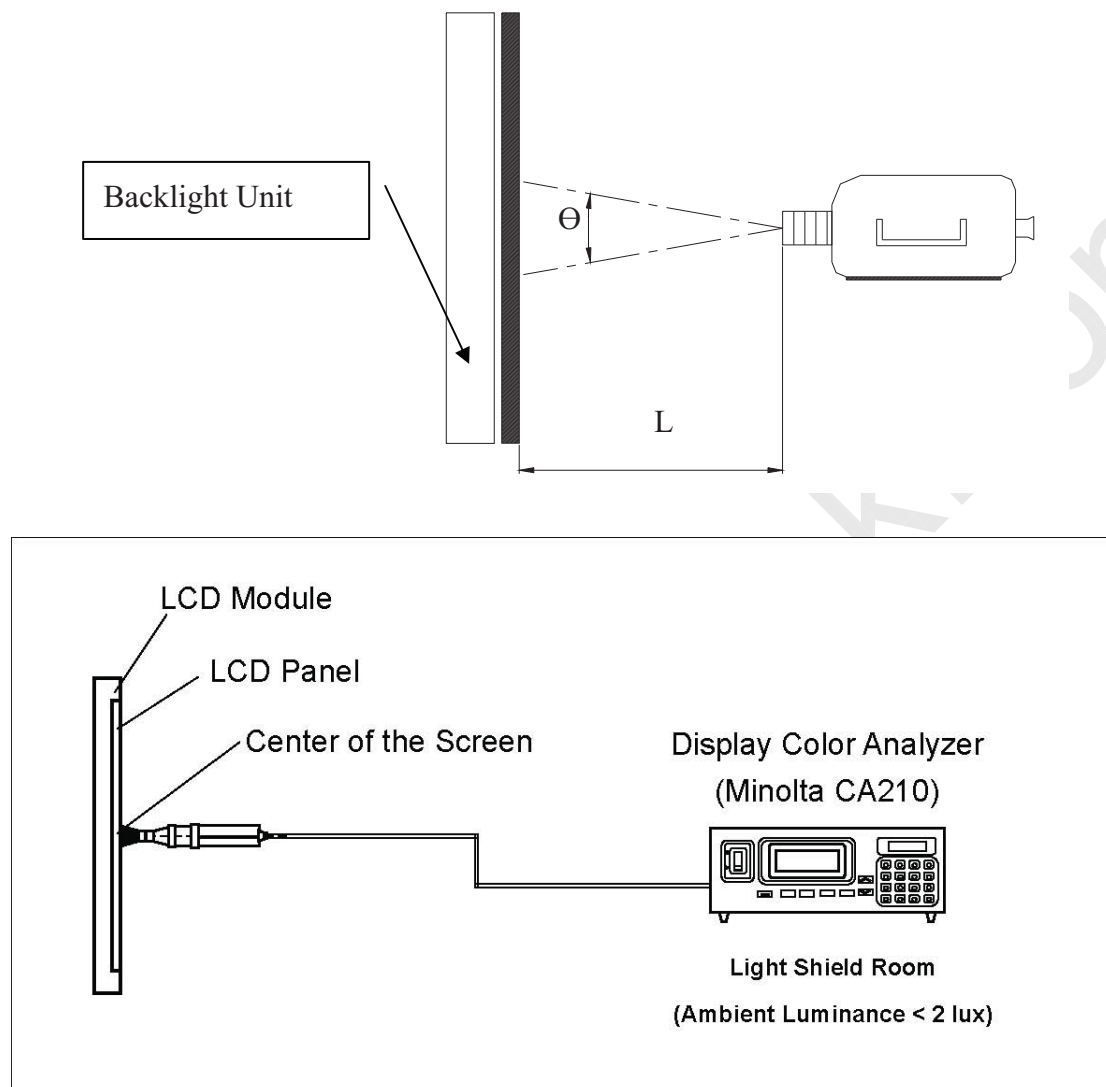
Contrast Ratio (CR) = L255 / L0

L255: Luminance of gray level 255

L 0: Luminance of gray level 0

CR = CR (5), where CR (X) is corresponding to the Contrast Ratio of the point X at the figure in Note (4)

Note (3) Measurement Method



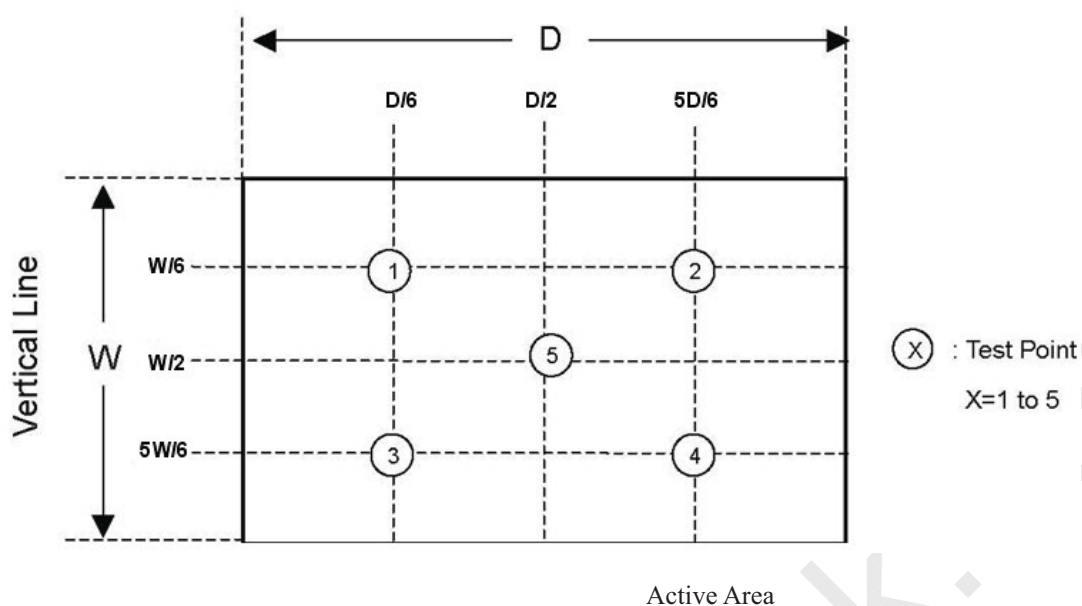
Item \ E	BM5A	BM7	SRIIA	SRIII	CA210	CS1000
Angle Θ	0.2°	1°	0.2°	0.2°	±2.5°	2°
Distance L	50cm	50cm	50cm	50cm	3cm	50cm

Note (4) Definition of White Variation (δW):

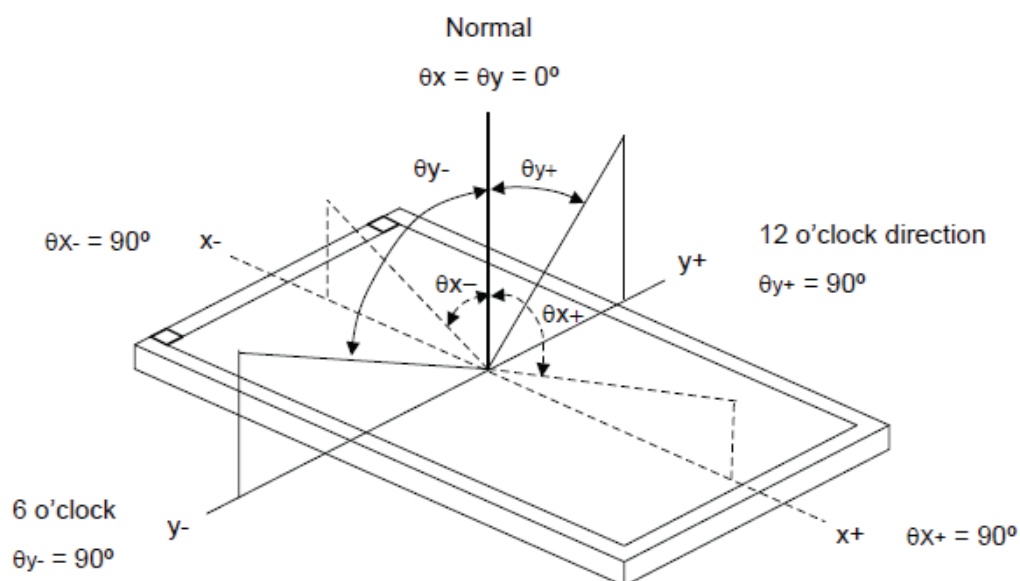
Measure the luminance of gray level 255 at 5 points

$$\delta W = \text{Maximum} [L(1), L(2), L(3), L(4), L(5)] / \text{Minimum} [L(1), L(2), L(3), L(4), L(5)]$$

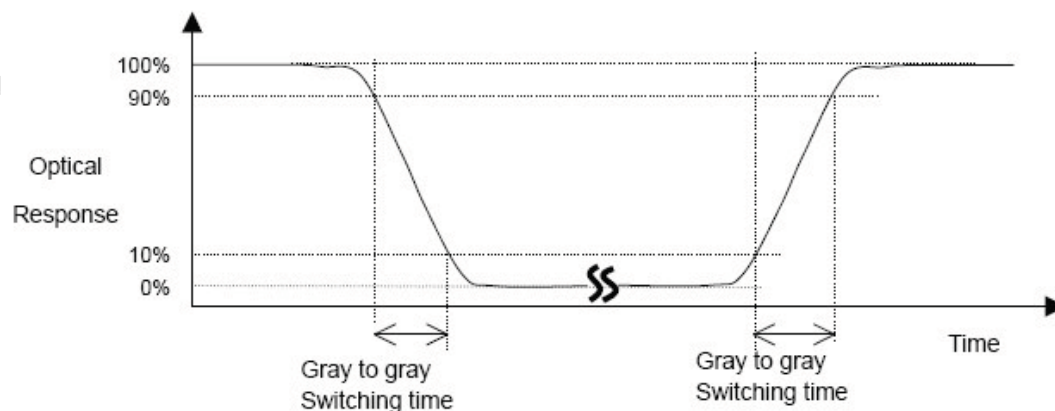
where L (X) is corresponding to the luminance of the point X at the figure below.



Note (5) Definition of Viewing Angle (θ_x , θ_y) :



Note (6) Definition of Gray-to-Gray Switching Time:



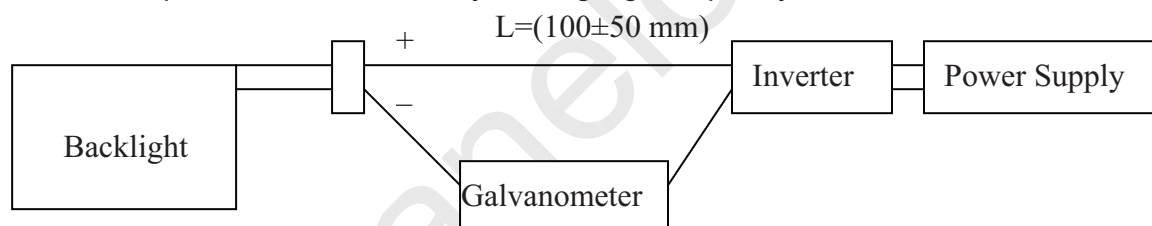
The driving signal means the signal of luminance 0%, 20%, 40%, 60%, 80%, 100%.

Gray to gray average time means the average switching time of luminance 0%,20%, 40%, 60%, 80%, 100% to each other.

8.0 ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Lamp Operate Voltage	V_L	—	1135	TBD	V_{RMS}	IL = 12.0mA (1)
Lamp Current	IL	—	12	—	mA_{RMS}	(1)
Lamp Starting Voltage	V_s	—	-	--- (0°C)	V_{RMS}	
		—	-	1590 (25°C)	V_{RMS}	
Operating Frequency	F_L	40		80		
Lamp Life Time	L_{BL}	50000	—	—		(2)
Power Cosumption	P_L	—	68	---		IL = 12.0mA (1)

Note (1) Lamp current is measured by utilizing high frequency current meters as shown below:



Note (2) CCFL Lifetime

Definition of the Lifetime:

The situation as below is a definition of service life while taking place:

- 1) Surface brightness descends to 50% of initial value.
- 2) The starting voltage is larger than the max value at 0°C in the Item 2.4.

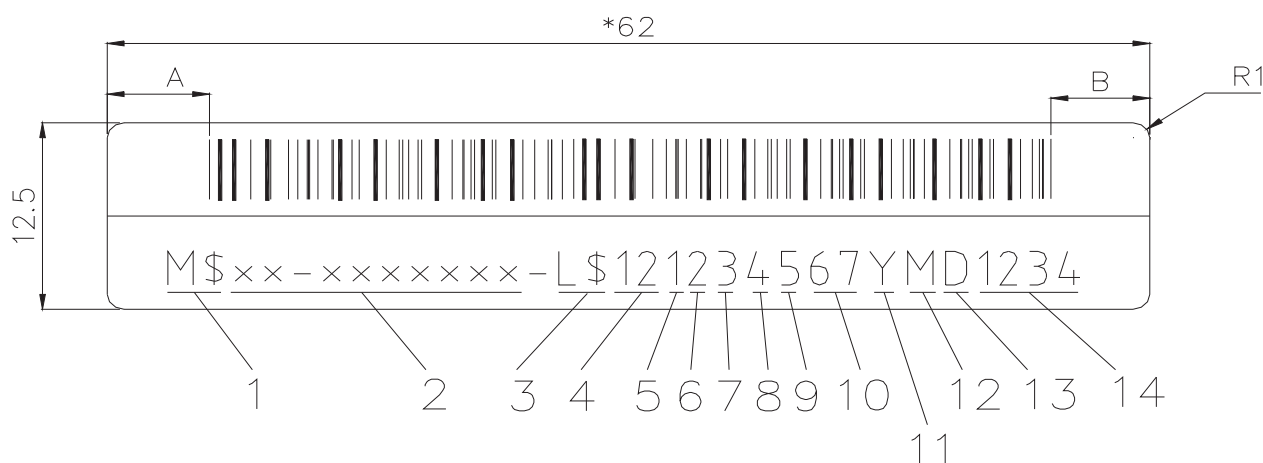
Working Life

The guarantee lifetime of CCFL is 50000 hours in the operating mode.	
Environment temperature	25±3°C
FL tube current	9.0 mA rms
Lighting Status	Continued Lighting
FL Lighting Frequency	50KHz

9.0 DEFINITION OF LABELS

9.1 Backlight Label

The barcode nameplate is pasted on each backlight as illustration, and its definitions are as following explanation.



1. Part No. ID Code: M\$
2. Part No.: Depend on CLT
3. Lot No. ID Code: L\$
4. Vendor ID Code: 2 codes, Depend on Vendor.
5. Lamp, refer to BLU Specification.
6. Diffuser sheet, refer to BLU Specification.
7. Diffuser Plate, refer to BLU Specification.
8. Reflector, refer to BLU Specification.
9. Prism sheet, refer to BLU Specification.
10. Other Components, 2 Codes, refer to BLU Specification.
11. Production year: 2006:6 ; 2007:7 ;
12. Production month: 1,2,3,4,5,6,7,8,9,X,Y,Z
13. Date: 1,2,3,4,5,6,7,8,9,A,B,...H,J,K,L,M,N,P,Q...,T,W,X,Y,Z
14. Serial No.: 0001,0002,0003,....., Reset everyday

Notes:

1. Material: Synthetic Paper
2. Thickness: $0.13 \pm 7\%$
3. Color: White
4. General Tolerance: ± 0.2
5. “ * ” Marks the design critical dimension
6. Bar-code printer's solution must be above 203dpi.
7. Without SPACE in front and behind “ - ” in barcode.
8. | A-B | = 2.0mm

Barcode: Code 93.



Specifications

Doc. No22.

NO2: Part No.: Depend on CLT 32inch Backlight(10040396-A0)

NO4: Vendor ID Code:

CLT	Fab	Tainan(CLT)	Souzei(LSO)	NingBo(LMO)	FoShan(LCO)
	Vendor ID Code	C1	C2	C3	C4

NO5: CCFL vender :

Code	CLT P/N	P/N	Vender	Vender P/N
1	11390411-AP	U_Shape	GIO	N/A

NO6: Diffuser sheet

Code	CLT P/N	P/N	Vender	Vender P/N
1	12360001-A0	PTR773-T75*3	Shinwha	N/A

NO7: Diffuser plate

Code	CLT P/N	P/N	Vender	Vender P/N
1	11440188-A0	A53201,PS	Entire	N/A

NO8: Reflector sheet

Code	CLT P/N	P/N	Vender	Vender P/N
1	11590436-A0	RE-200T	Eternal	N/A

NO9: Prism sheet

Code	CLT P/N	P/N	Vender	Vender P/N
1	N/A	N/A	N/A	N/A

NO10: Other Components

Code	CLT P/N	P/N	Vender	Vender P/N
01	N/A		CLT	N/A

NO11: mean“Y” , 2008 as 8 、2009 as 9.....

NO12: mean“M” , 1.2.3.4.5.6.7.8.9.X.Y.Z

NO13: mean“D” , 1.2.3.4.5.6.7.8.9.A.B.C.D.....V

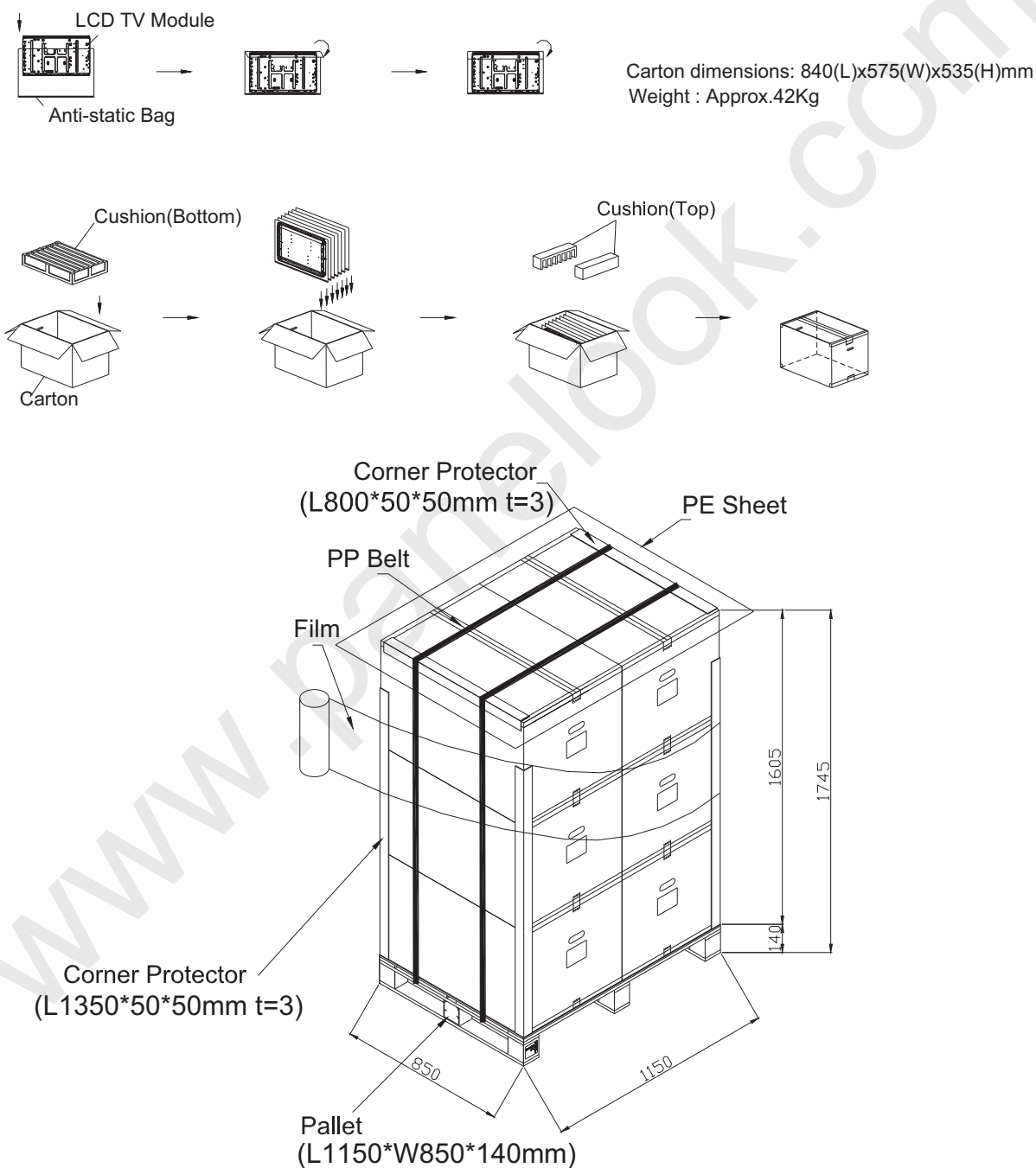
NO14: “S/N” , 0001.....9999

10. PACKING

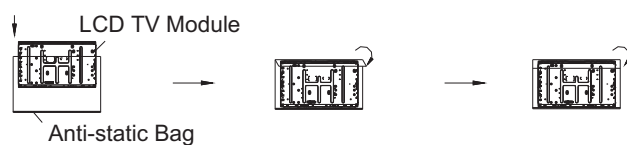
10.1 Carton SPECIFICATIONS

- (1) 7 LCD modules / 1Box
- (2) Box dimensions : 840 (L) ×575 (W) ×535 (H) mm
- (3) Weight : approximately : 42 kg

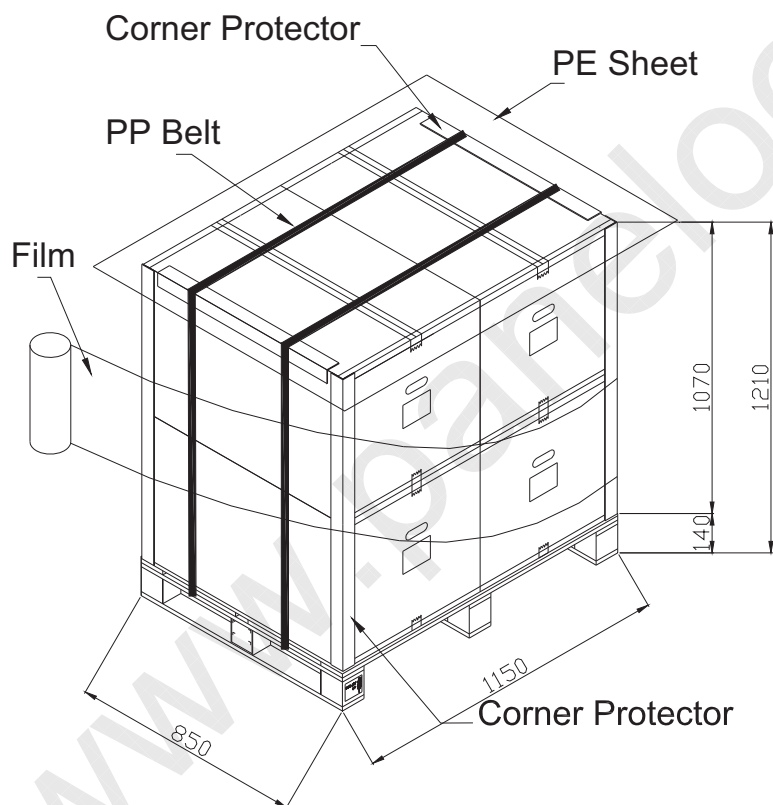
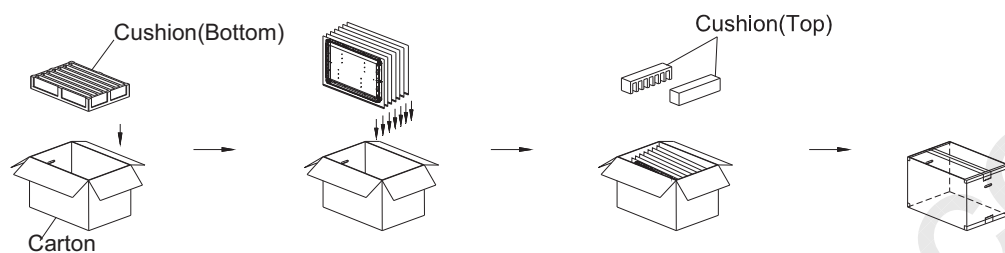
10.2 Sea transportation



10.3 Air transportation



Carton dimensions: 840(L)x575(W)x535(H)mm
Weight : Approx.42Kg

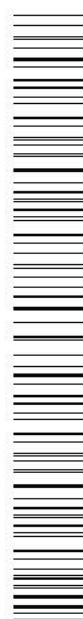
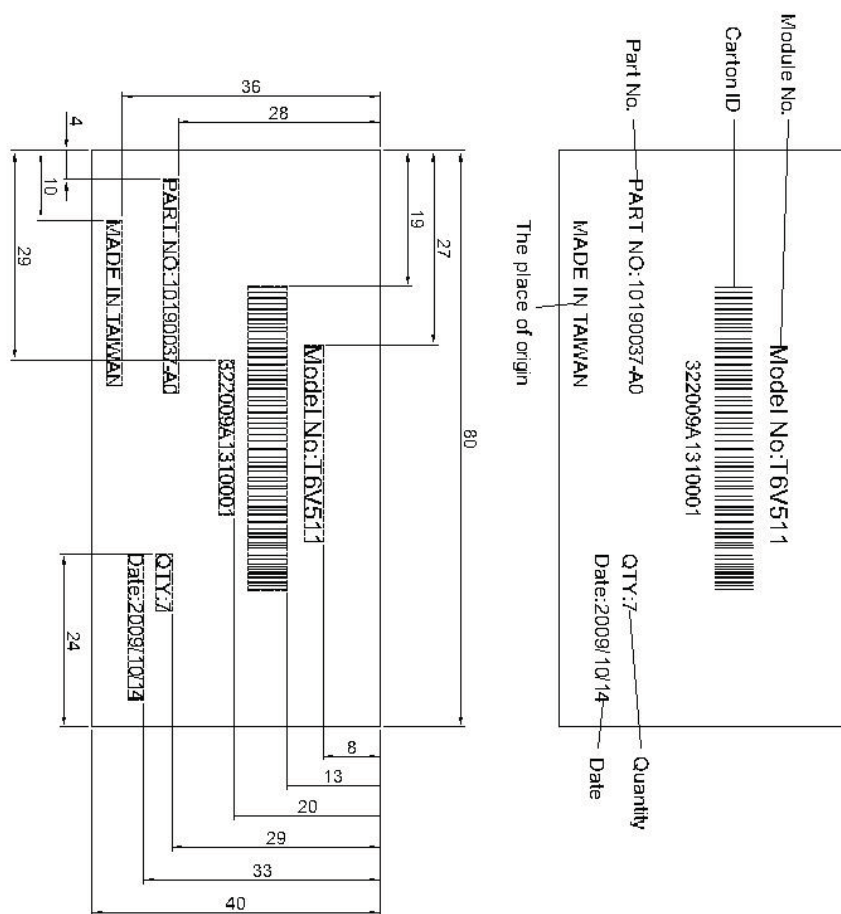




Specifications

Doc. No25.

10.4 PACKAGING LABEL



322009A1310001

1 2 3 4 5 6

Carton ID:

1: 32Inch

2: Year 2007, 2008, 2009,

3: Month 1 2 3 4 5 6 7 8 9 X Y Z

4: Date 01 02 03 04 ... 31

5: Grade A=1, D=4, E=5, K=6

6: Revision 0001~9999

Note:

1. Carton ID. (Code 93.1 line spacing 3)

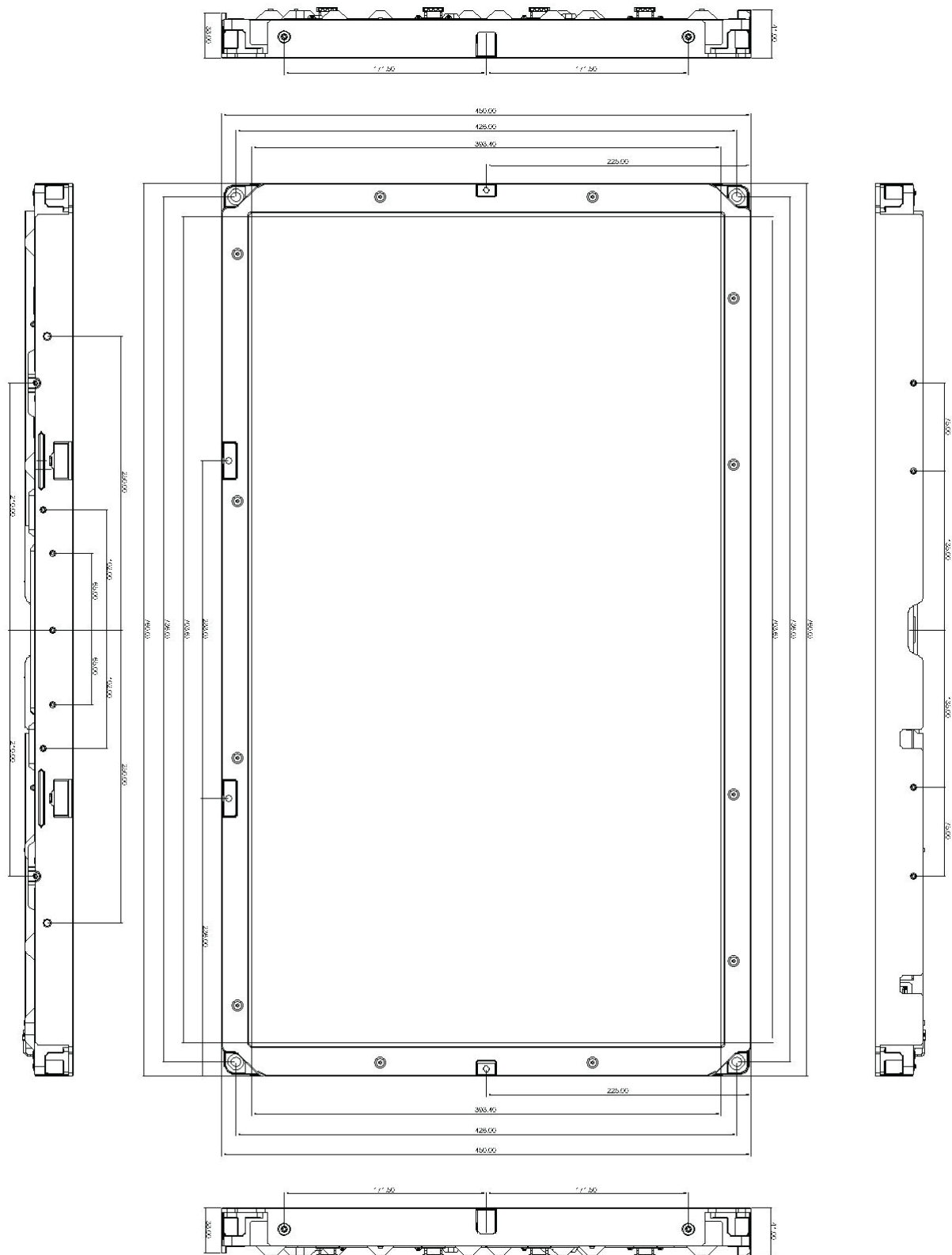
2. 紙質: PP

3. 字型: Module No. (Arial, Size10) 外, 其他 (Arial, Size9)

3. 印刷不可以有缺陷或不清楚

4. 顏色: 全部黑色印刷

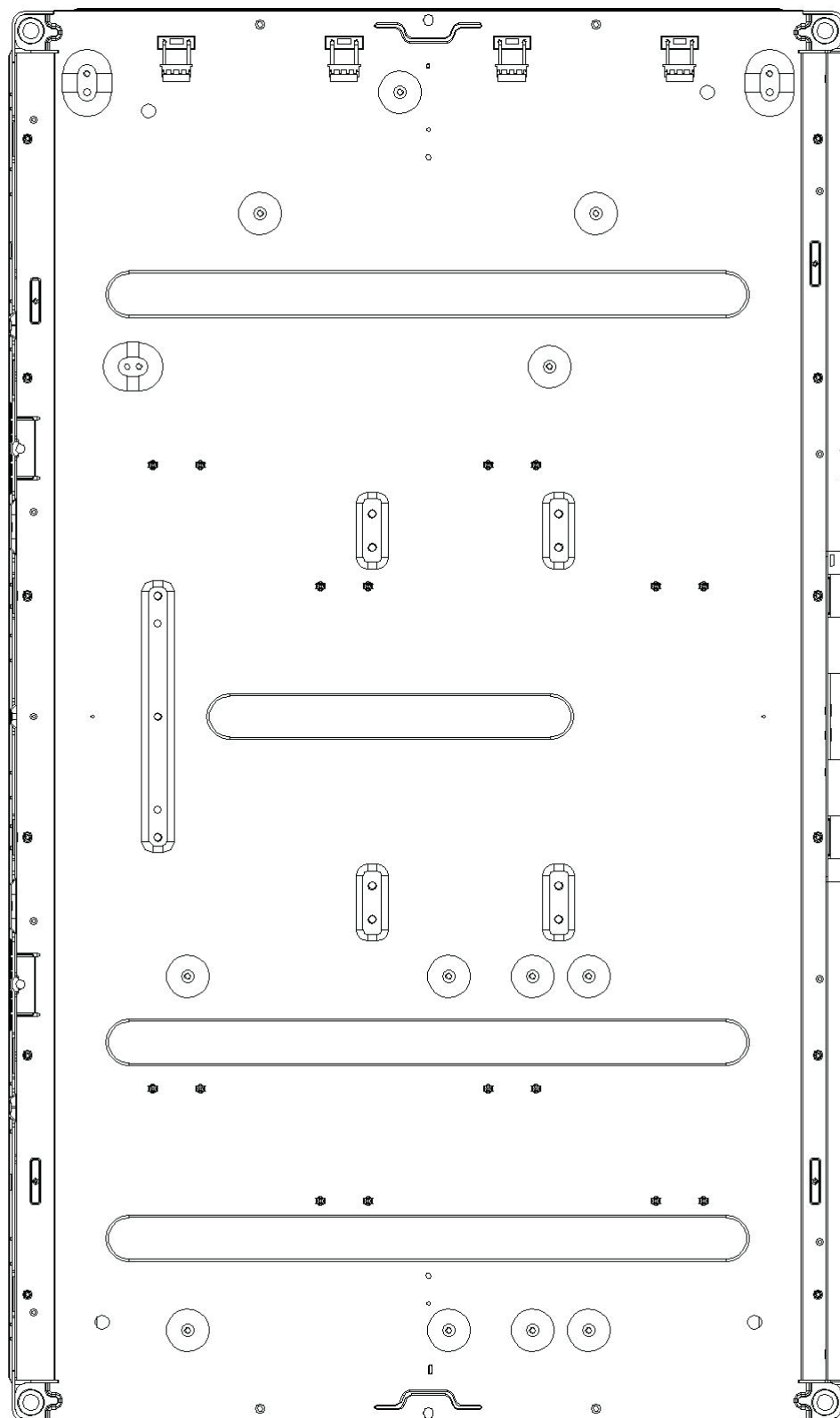
11.0 LCD MODULE DRAWING





Specifications

Doc. No27.





Specifications

Doc. No28.

12.0 STORAGE CONDITION

Normal condition: Temperature: 15°C~35°C; Humidity: 30% ~70%

13.0 WARRANTY

The warranty period is one year after manufacturing.

14.0 LOT NO. GENERATION

According to the customer supply specification